

We claim:

1. A foam composed of a high-temperature-resistant thermoplastic, and
5 having an open-cell structure.
2. A foam as claimed in claim 1, which has a cell size of from 50 to 2000 μm , preferably from 100 to 1000 μm , particularly preferably from 100 to 800 μm , and/or has a density of from 20 to 200 g/l, preferably from 20 to
10 150 g/l, particularly preferably from 30 to 100 g/l.
3. A foam as claimed in claim 1 or 2, wherein the open-cell factor for the foam is at least 75%, preferably at least 85%, particularly preferably at least 90%.
- 15 4. A foam as claimed in claim 1 or 2, wherein the high-temperature-resistant thermoplastic has been selected from the group consisting of polyetherimides, polyether sulfones, polysulfones, polyether ketones, polyether ether ketones, polyether ketone ketones, polyethersulfonamides, and mixtures of these.
- 20 5. A foam as claimed in claim 1 or 2, wherein the plastic has a glass transition temperature above 170°C, preferably above 180°C, particularly preferably above 200°C, and/or is thermoplastically extrudable at temperatures above 280°C, preferably above 300°C, particularly preferably above 320°C.
- 25 6. A process for producing an open-cell foam as claimed in claim 1 or 2, by melting a thermoplastic or a mixture comprising a thermoplastic, giving a melt, mixing the melt with at least one blowing agent under pressure, and foaming the melt comprising the blowing agent by extrusion into the open atmosphere, which comprises
30 carrying out the foaming at a melt temperature which is higher, by from 2 to 20°C, preferably from 2 to 12°C, particularly preferably from 2 to 10°C, than the temperature at which a closed-cell foam is formed.

7. A process for producing an open-cell foam as claimed in claim 1 or 2, by melting a thermoplastic or a mixture comprising a thermoplastic, giving a melt, mixing the melt with at least one blowing agent under pressure, and foaming the melt comprising the blowing agent by extrusion into the open atmosphere, which comprises using a foaming plastic which comprises a pulverulent solid which acts as cell-opener, and comprises carrying out the foaming at a melt temperature which is higher, by from 2 to 12°C, preferably from 2 to 10°C, particularly preferably from 2 to 8°C, than the temperature at which a closed-cell foam is formed.
8. A process for producing an open-cell foam as claimed in claim 1 or 2, by melting a thermoplastic or a mixture comprising a thermoplastic, giving a melt, mixing the melt with at least one blowing agent under pressure, and foaming the melt comprising the blowing agent by extrusion into the open atmosphere, which comprises using a foaming plastic which comprises a foreign polymer which acts as cell-opener, and which permits the production of the open-cell foam at foaming temperatures at which a closed-cell foam would otherwise be produced.
9. A process as claimed in claim 7, wherein use is made of a pulverulent solid selected from the group consisting of graphite, graphite with talc, and graphite with other fillers; and/or the amount used of the pulverulent solid is from 0.1 to 5.0% by weight, preferably from 0.2 to 4.0% by weight, particularly preferably from 0.5 to 4.0% by weight, based in each case on the weight of polymer.
10. A process as claimed in claim 8, wherein the amount used of a foreign polymer is from 0.1 to 20% by weight, preferably from 0.2 to 10% by weight, particularly preferably from 0.2 to 5.0% by weight, based in each case on the total weight of polymer.
11. A process as claimed in claim 6, wherein use is made of a blowing agent selected from the group consisting of inert gases, hydrocarbons, aliphatic

alcohols, aliphatic ketones, aliphatic esters, fluorinated hydrocarbons, chemical blowing agents, and mixtures of these, these blowing agents being used in combination with water, where appropriate.

- 5 12. A process as claimed in claim 6, wherein the amount used of the blowing agent is from 0.5 to 15% by weight, preferably from 1 to 12% by weight, particularly preferably from 3 to 10% by weight, based in each case on the total weight of polymer.
- 10 13. An open-cell foam obtainable by a process as claimed in claim 6.
14. A molding, in particular a sheet, comprising an open-cell foam as claimed in claim 1 or 2.
- 15 15. A process for producing foam sheets for use in sound deadening, which comprises producing sheets composed of a foam by a process as claimed in claim 6, in particular by foaming of the melt via extrusion into the free atmosphere from a slot die and shaping in a calibrator, giving sheets with wide and narrow outer surfaces, and
- 20 dividing the resultant sheets parallel to their wide surfaces, giving two portions of the sheets, each with a new inner wide surface, and, where appropriate,
- 25 adhesive-bonding the two portions obtained by division of the sheets, the surfaces adhesive-bonded to one another here being those which were previously the outer wide surfaces, so that the location of the new inner wide surfaces is on the outside.
16. A process as claimed in claim 7, wherein use is made of a blowing agent selected from the group consisting of inert gases, hydrocarbons, aliphatic
- 30 alcohols, aliphatic ketones, aliphatic esters, fluorinated hydrocarbons, chemical blowing agents, and mixtures of these, these blowing agents being used in combination with water, where appropriate.
17. A process as claimed in claim 7, wherein the amount used of the blowing agent is from 0.5 to 15% by weight, preferably from 1 to 12% by weight,
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particularly preferably from 3 to 10% by weight, based in each case on the total weight of polymer.

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18. An open-cell foam obtainable by a process as claimed in claim 7.
19. A process as claimed in claim 8, wherein use is made of a blowing agent selected from the group consisting of inert gases, hydrocarbons, aliphatic alcohols, aliphatic ketones, aliphatic esters, fluorinated hydrocarbons, chemical blowing agents, and mixtures of these, these blowing agents being used in combination with water, where appropriate.
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20. A process as claimed in claim 8, wherein the amount used of the blowing agent is from 0.5 to 15% by weight, preferably from 1 to 12% by weight, particularly preferably from 3 to 10% by weight, based in each case on the total weight of polymer.
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21. An open-cell foam obtainable by a process as claimed in claim 8.
22. A process for producing foam sheets for use in sound deadening, which comprises producing sheets composed of a foam by a process as claimed in claim 7, in particular by foaming of the melt via extrusion into the free atmosphere from a slot die and shaping in a calibrator, giving sheets with wide and narrow outer surfaces, and dividing the resultant sheets parallel to their wide surfaces, giving two portions of the sheets, each with a new inner wide surface, and, where appropriate, adhesive-bonding the two portions obtained by division of the sheets, the surfaces adhesive-bonded to one another here being those which were previously the outer wide surfaces, so that the location of the new inner wide surfaces is on the outside.
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23. A process for producing foam sheets for use in sound deadening, which comprises producing sheets composed of a foam by a process as claimed in claim 8, in particular by foaming of the melt via extrusion into the free atmosphere from a slot die and shaping in a calibrator, giving sheets with wide and narrow outer surfaces, and
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dividing the resultant sheets parallel to their wide surfaces, giving two portions of the sheets, each with a new inner wide surface, and, where appropriate,

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adhesive-bonding the two portions obtained by division of the sheets, the surfaces adhesive-bonded to one another here being those which were previously the outer wide surfaces, so that the location of the new inner wide surfaces is on the outside.

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